

CLAIMS:

1. A firearm cartridge case comprising:
an aft end;
a relatively straight-walled body portion connected to the aft end;
5 a shoulder connected to the body portion at a body-to-shoulder junction,
wherein the body portion defines a body cavity having an interior body diameter at
the body-to-shoulder junction; and
a neck connected to the shoulder at a neck-to-shoulder junction and having an
interior neck diameter which defines a ratio of the interior body diameter to the
10 interior neck diameter which is in the range from about 1.8:1 to 2.3:1, wherein the
interior neck diameter is sized to retain a bullet at least partially nested therein,
wherein the case is sized and configured to contain a sufficient quantity of propellant
such that igniting the propellant by means of a primer causes formation of a
propellant plug having a diameter that is approximately the diameter of the bullet, and
15 wherein the shoulder is connected to the neck at an angle of approximately 40 degrees
or more which causes the propellant plug to shear free from unburned propellant that
is disposed adjacent the relatively straight-walled body portion.
2. The firearm cartridge case according to claim 1, wherein the aft end comprises
20 at least one flash hole sized and configured to provide a flash path between a primer and
propellant disposed within the cartridge case.
3. The firearm cartridge case according to claim 2, wherein the aft end comprises
a plurality of flash holes sized and configured to provide a flash path between a primer and
25 propellant disposed within the cartridge case.
4. The firearm cartridge case according to claim 1, wherein the ratio of the
interior body diameter to the interior neck diameter is in the range from about 2:1 to 2.2:1.
- 30 5. The firearm cartridge case according to claim 1, wherein the relatively
straight-walled body portion has a cylindrical shape.

6. A rifle cartridge, comprising:

a primer;

a rifle case housing a quantity of propellant, the case having:

5 an aft end with at least one flash hole sized and configured to provide a flash path between the primer and the propellant disposed within the case housing;

a relatively straight-walled body portion connected to the aft end and defining a base cavity having an interior base diameter,

10 a shoulder connected to the body portion at a body-to-shoulder junction, wherein the body portion defines a body cavity having an interior body diameter at the body-to-shoulder junction; and

a neck connected to the shoulder at a neck-to-shoulder junction and having an interior neck diameter which defines a ratio of the interior body diameter to the interior neck diameter which is in the range from about 1.8:1 to 2.3:1; and

15 a bullet at least partially nested within the neck, wherein the case is sized and configured to contain sufficient propellant such that igniting the propellant with the primer causes formation of a propellant plug having a diameter that is approximately the interior neck diameter, and wherein the shoulder is connected to the neck at an angle of approximately 40 degrees or more which causes the propellant plug to shear free from unburned propellant that is disposed adjacent the relatively straight-walled body portion as the bullet accelerates out of the cartridge in response to pressure generated by the propellant.

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7. The firearm cartridge according to claim 6, wherein the aft end comprises a plurality of flash holes sized and configured to provide a flash path between the primer and the propellant disposed within the case housing.

30 8. The firearm cartridge according to claim 6, wherein the ratio of the interior body diameter to the interior neck diameter is in the range from about 2:1 to 2.2:1.

9. The firearm cartridge case according to claim 6, wherein the relatively straight-walled body portion has cylindrical shape.

5 10. A firearm gun chamber sized and configured to house a cartridge as defined in claim 6 for subsequent firing, comprising:

a base with a diameter sized to allow a close fit of the cartridge aft end;

a relatively straight-walled body portion connected to the aft end sized to allow a close fit of the cartridge body portion;

10 a shoulder connected to the body portion at a body-to-shoulder junction sized to allow a close fit of the cartridge shoulder; and

a neck connected to the shoulder at a neck-to-shoulder junction sized to allow a close fit of the cartridge neck.

15 11. A firearm gun chamber for firing a case-less projectile, comprising:

a base;

a relatively straight-walled body portion extending from the base defining a generally cylindrical body cavity having a body diameter;

20 a shoulder portion connected to the relatively straight-walled body portion at a body-to-shoulder junction;

25 a neck portion defining a neck cavity and having a neck diameter which defines a ratio of the body diameter to the neck diameter which is in the range from about 1.8:1 to 2.3:1, wherein the neck diameter is sized to accommodate a case-less projectile at least partially nested therein, wherein the chamber is sized and configured to contain a sufficient quantity of propellant such that igniting the propellant causes formation of a propellant plug having a diameter that is approximately the interior neck diameter, and wherein the shoulder is connected to the neck at an angle of approximately 40 degrees or more which causes the propellant plug to shear free from unburned propellant that is disposed adjacent the relatively
30 straight-walled body portion.

12. The firearm gun chamber according to claim 11, wherein the relatively straight-walled body portion has a slightly tapered shape, being larger near the base.

13. The firearm gun chamber according to claim 11, wherein the relatively
5 straight-walled body portion has cylindrical shape.

14. The firearm gun chamber according to claim 11, wherein the ratio of the body diameter to the neck diameter is in the range from about 2:1 to 2.2:1.

10 15. A method for manufacturing a firearm cartridge, comprising:
providing an aft end;
disposing a cylindrical case wall on the aft end to provide a relatively straight-walled portion defining a body cavity;
disposing a shoulder on the relatively straight-walled portion at a body-to-
15 shoulder junction and wherein the body cavity has an interior body diameter at the body-to-shoulder junction;
forming a neck/shoulder junction on the shoulder, wherein the shoulder is connected to the neck at an angle of approximately 40 degrees or more; and
disposing a neck on the neck-to-shoulder junction, the neck having an interior
20 neck diameter which defines a ratio of the interior body diameter to the interior neck diameter which is in the range from about 1.8:1 to 2.3:1, wherein the interior neck diameter is sized to retain a bullet at least partially nested therein, wherein the body cavity is sized and configured to contain a sufficient quantity of propellant such that
igniting the propellant by means of a primer causes formation of a propellant plug
25 having a diameter that is approximately the diameter of the bullet, and wherein the propellant plug shears free from unburned propellant that is disposed adjacent the relatively straight-walled body portion.

16. The method for manufacturing a firearm cartridge according to claim 15,
30 wherein the ratio of the interior body diameter to the interior neck diameter is in the range from about 2:1 to 2.2:1.